

**Notes on the butterflies of Laos (V): description of a new subspecies of *Faunis aerope* (Leech, 1890) (Lepidoptera, Nymphalidae, Morphinae) from a montane area of Central Laos**

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**Abstract** A new subspecies of *Faunis aerope*, *F. aerope montana* ssp. nov., is described from a montane range (1900–2100m) of Central Laos and compared with three other subspecies, *aerope*, *excelsa* and *centrala*. Wing patterns and male genitalia were examined and illustrated. A last instar larva of the new subspecies was discovered on a leaf of an orchid, *Coelogyne* sp.

**Key words** *Faunis*, *Faunis aerope*, *Faunis aerope montana* ssp. nov., food plant, *Coelogyne* sp., Lepidoptera, Nymphalidae, Morphinae, Amathusiini, Laos

## Introduction

The genus *Faunis* Hübner, [1819] belonging to Amathusiini consists of nine species, most of which occur in the southern areas of the Oriental Region, i.e. Sundaland (*F. canens*, *F. gracilis*, *F. kirata* and *F. stomphax*), the Philippine islands (*F. sappho* and *F. phaon*), and Sulawesi (*F. menado*). Among these species, *F. canens* spreads into mainland Asia to Sikkim, in addition to the two larger continental species, *F. eumeus* and *F. aerope* (Aoki *et al.*, 1982; D'Abrera, 1985). This genus is characterized by having a gnathos in the male genitalia, and is related to the genera *Melanocyma* and *Taenaris* in this respect (Corbet & Pendlebury, 1992).

The largest species of the genus, *F. aerope*, is distributed in Laos, Vietnam and southern China (Osada *et al.*, 1999; Monastyrskii & Devyatkin, 2003; Chou, 1999; Igarashi & Fukuda, 2000). Monastyrskii (2004), when he described the subspecies *F. a. centrala*, divided the species *aerope* into three subspecies, *F. a. aerope*, *F. a. excelsa* and *F. a. centrala*, having synonymized the formerly described subspecies *F. a. yunnanensis* Brooks, 1933 and *F. a. longpoensis* Huang, 2001 with *F. a. aerope*, and *F. a. masseyeffi* Brooks, 1949 with *F. a. excelsa*, respectively. The authors believe that another subspecies name *F. a. jinpingnis* Li illustrated in Li (1999) should be regarded as a *nomen nudum*, because its original description cannot be found anywhere.

Monastyrskii (2004) stated that the taxon *F. aerope* can be divided into two distinctive subspecies groups, the *F. a. aerope* group with small submarginal spots on the underside of both wings and short valvae in the male genitalia, and the second group consisting of *F. a. excelsa* and *F. a. centrala* with much larger submarginal spots and long valvae in the male genitalia. Recently the authors discovered a separate population of individuals of *F. aerope* with large submarginal spots on the underside of both wings and short valvae in the male genitalia from a hitherto uninvestigated montane area of Central Laos, and describe a new subspecies based on these and other distinct characteristics in comparison with other subspecies.

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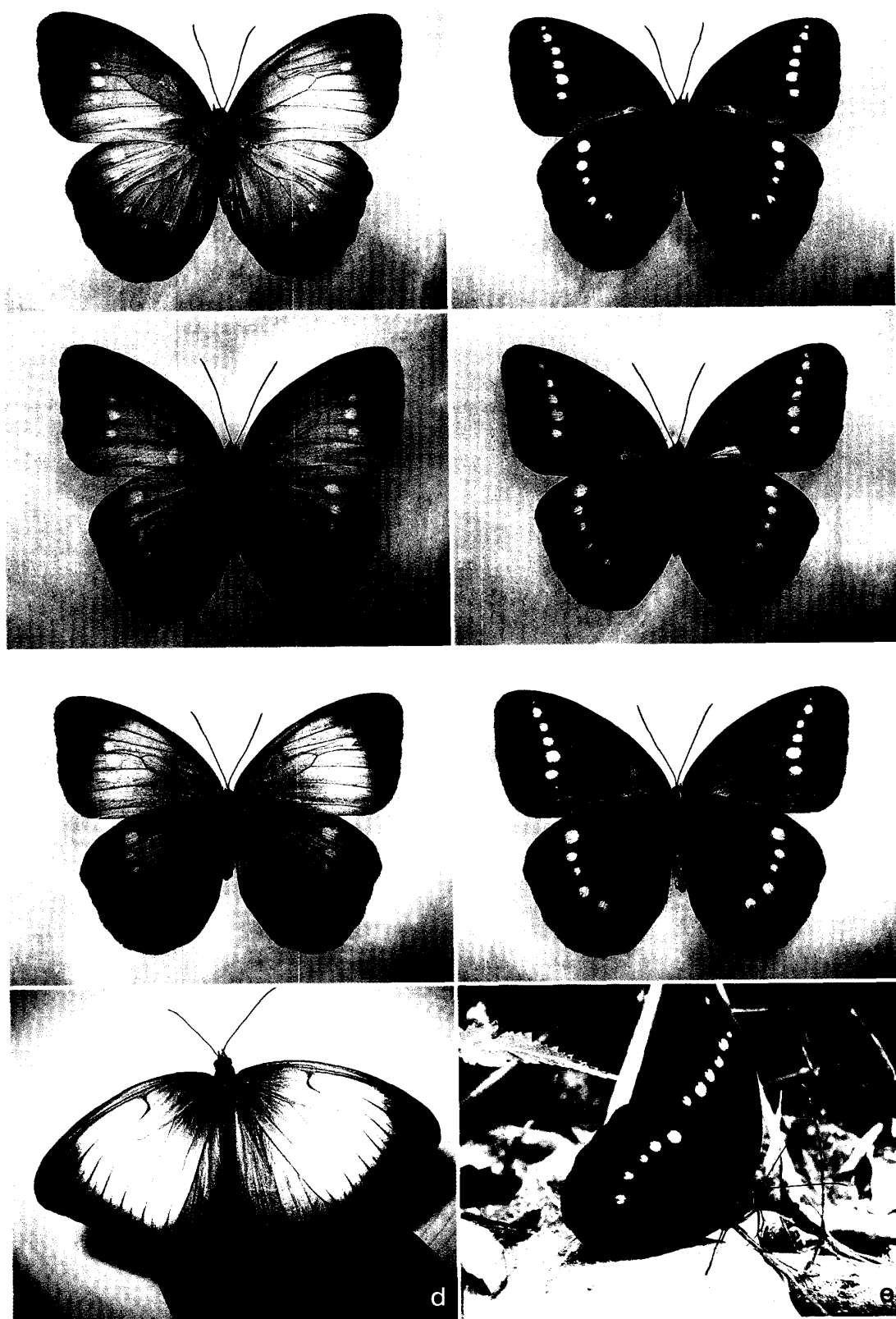


Fig. 1. *Faunis aerope montana* ssp. nov., V: ventral view. a: ♂, holotype; b: ♂, paratype; c: ♀, paratype; d: ♂, just after capture; e: ♂, resting on the ground.

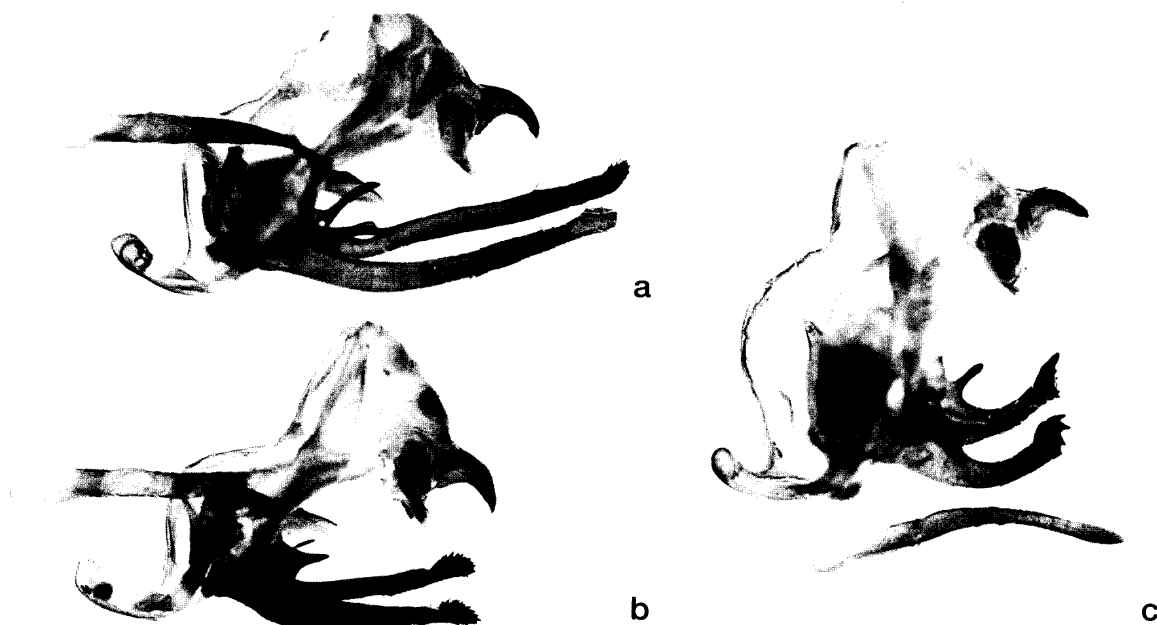


Fig. 2. ♂ genitalia of *Faunis aérope* subspp. a: *F. a. excelsa*; b: *F. a. montana* ssp. nov.; c: *F. a. aérope*.

## Materials and methods

All specimens of the new subspecies examined in the present work were collected in 2007 on a mountain range around Phou Samsoum (altitude 1900–2100 m), Xieng Khouang Province, Lao P. D. R., during the collecting trips of the authors under the permission of Lao government authorities (the latest Work Permit for environmental survey to the senior author, I. D. Card No. 125-08, issued at Vientiane on January 22, 2008), and are preserved in the collection of the senior author.

For comparison, 1 ♂ (Figs. 3a, c; FWL = 43.9 mm), 1 ♀ (Fig. 3b; FWL = 45.9 mm) of *Faunis aérope aérope* from Sichuan (Mt. Omei Shan, August 5, 1981) and 1 ♀ (FWL = 48.5 mm) from North Vietnam (Near Mt. Tha Ca, Ha Giang, Cao Bang, June, 2007) in the collection of Research Institute of Evolutionary Biology, Tokyo, were examined. Also, 10 ♂ (Figs. 2a, 3c; FWL = 41.3–43.1 mm) and 1 ♀ (Fig. 3d; WL = 43.2 mm) of *Faunis aérope excelsa* from Central Laos (Khammouane Province, Nakhai, altitude 550 m, May 25, 1997, Hiroyuki Wakahara *leg.*) in the collection of the senior author were examined. Photographs of 1 ♂ (Fig. 4a; FWL = 48 mm) and 1 ♀ (Fig. 4b; FWL = 54 mm) of *Faunis aérope centrala* from Central Vietnam (Kon Tum Province, Ngoc Linh Nature Reserve, altitude 1000 m, May 6, 1998) were available by courtesy of Dr. A. L. Monastyrskii (Vietnam-Russia Tropical Centre, Hanoi).

For the examination of male genitalia, abdomens were treated overnight with an aqueous 10% KOH solution at room temperature, washed several times with water, and placed in water for dissection and observation. A Leica MS5 spectrometer with magnification scale up to x40 was utilized for examination.

## Description

### *Faunis aérope montana* ssp. nov.

(Fig. 1a: ♂, Holotype; Figs 1b–c; Fig. 2b: 2 ♂ 1 ♀, Paratypes)

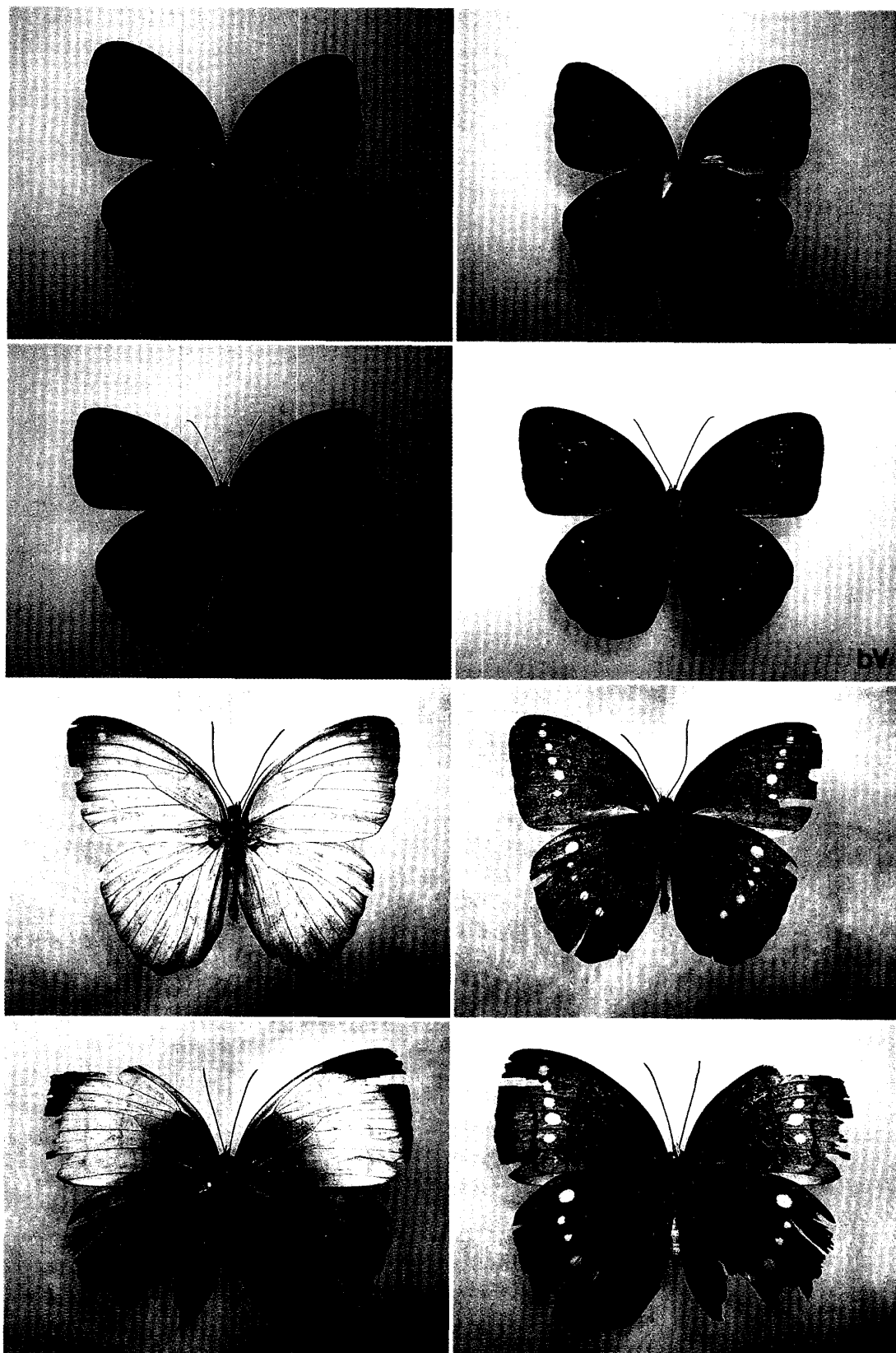


Fig. 3. *Faunis aérope* subsp. a-b: *F. a. aérope* (China), ♂ (a), ♀ (b). c-d: *F. a. excelsa* (Laos), ♂ (c), ♀ (d).

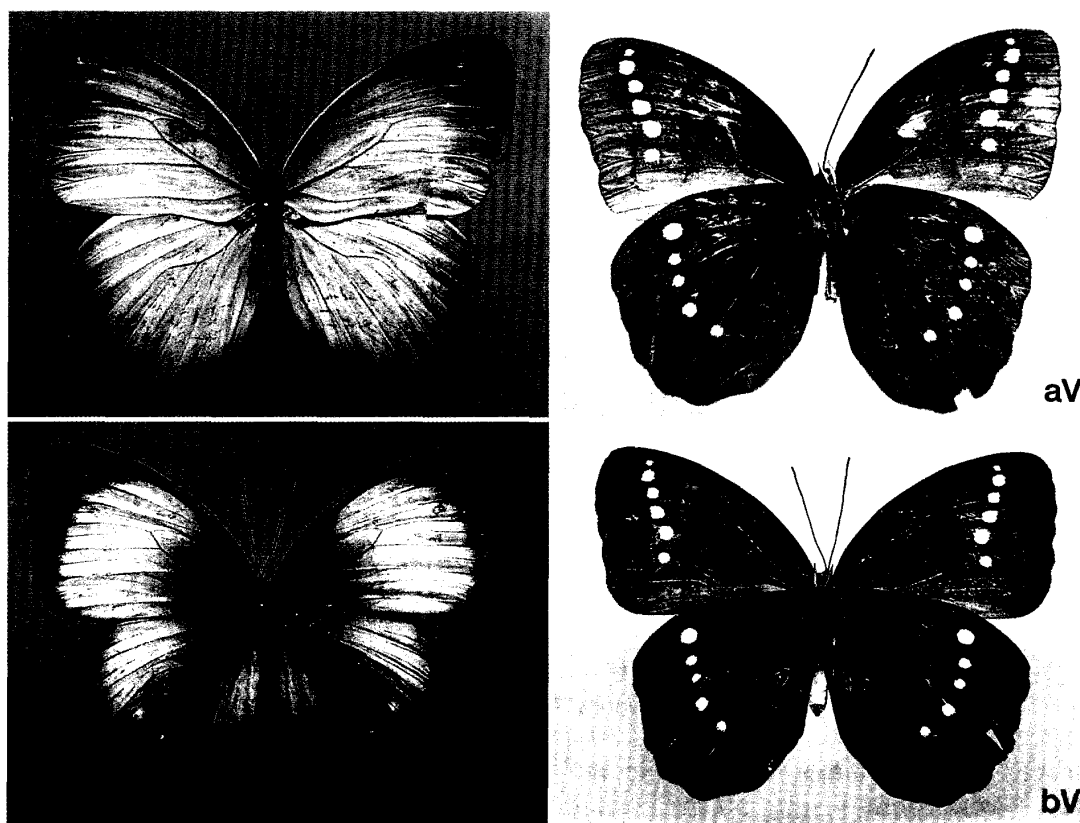


Fig. 4. *Faunis aerope centrala* (Vietnam), ♂ (a), ♀ (b).

Holotype. ♂ (Fig. 1a), June 22, H. Wakahara leg. (HW). This specimen and 1♂1♀ of paratypes will be deposited in the Research Institute of Evolutionary Biology, Tokyo. Another 3♂1♀ of the paratypes will be deposited in the Toyosato Museum of Entomology, Tsukuba. Paratypes. June 18, 1♂ (Fig. 1b), Norio Nakamura leg. (NN); 2♂1♀, HW; 1♂2♀, Hideko Nakamura leg. (HN); 7♂3♀, Kongchai Phonsavanh leg. (KP); 1♀, Phuttavong Phonsavanh leg. (PP). June 20, 1♂3♀, NN. June 21, 1♂, KP; 1♀, NN; 1♀ (Fig. 1c), HN. June 22, 3♂ (Fig. 2b), HW; 2♂, KP; 1♀, PP. Among them, 1♂1♀ and genitalia of 1♂ are illustrated.

♂. Forewing length, 49.0 mm (Holotype), 43.4–51.2 mm (Paratypes,  $n = 15$ ); Antenna length, 22.7 mm (Holotype), 20.0–24.6 mm (Paratypes,  $n = 15$ ).

♀. Forewing length, 48.4–54.3 mm (Paratypes,  $n = 12$ ); Antenna length, 22.4–24.7 mm (Paratypes,  $n = 12$ ).

Wing pattern. ♂. Upside: the ground color of both wings is grayish brown, with brilliant silvery glitter when alive (Fig. 1d); the broad dark brown subapical band on the forewing extends, gradually narrowing, into space 2; on the hindwing, a dark brown band extends from tornus along the marginal edge to space 7; in spaces 2–6 on both wings, white dots on the underside are visible. Underside: the ground color is chocolate brown; the subbasal fascia in the cell is not in contact with the cell marking; the subbasal fascia is straight where joins the upper edge of the cell, and does not bend inward; the distinctively white submarginal spots in spaces 2–6 on both wings are much larger than in *F. a. aerope*.

♀. Upside: the ground color is similar to that of ♂; the dark brown subapical band on the forewing is more distinct than in ♂, nearly black, and extends to tornus; the dark brown band

along the tornal/submarginal edge of the hindwing is wider than in ♂. Underside: the color and pattern of both wings are similar to those of ♂.

♂ genitalia (Fig. 2b): in general aspect, similar to that of *F. a. aerope* (Fig. 2c). The valvae are short, and clearly distinguishable from those of *F. a. excelsa* (Fig. 2a) or *F. a. centrala* with longer valvae.

Differences between the new and other subspecies: in comparison with *F. a. aerope*, the new subspecies is larger in size in both sexes; the subapical band on the forewing upperside is broader and more distinct in both sexes; the submarginal spots in spaces 2–6 on the underside of both wings are much larger. In comparison with *F. a. excelsa* from Central Laos, the new subspecies *montana* is larger in size in both sexes; the subapical band on the forewing upperside of both sexes is broader and more distinct; the valvae of ♂ genitalia ( $n = 3$ ) are shorter than those of *excelsa* ( $n = 3$ ). In comparison with *F. a. centrala*, the valvae of ♂ genitalia are shorter; the subbasal fascia in the cell of forewing underside of *montana* is not in contact with the cell marking, while in *centrala* both markings join together.

### Habitat, behavior and early stages

The new subspecies inhabits the evergreen forests at altitude 1900–2100 m covering the slope of Phou (Mount) Samsoum, the third highest peak (2620 m) of Laos. The adults appear in the woods and forest paths (Fig. 6), and fly slowly at a height of 1–1.5 m above the ground unlike other *Faunis* species which have been reported to fly close to the ground. The butterflies were found resting on the ground (Fig. 1e). This new race lives at a higher altitude than other subspecies, *F. a. aerope* (China, 700–1500 m; Igarashi & Fukuda, 2000), *F. a. excelsa* (Central Laos, 550 m, see Materials and methods; 623m, Uémura, 2007) and *F. a. centrala* (Central Vietnam, 1000 m; Monastyrskii, 2004), and is, therefore, given the subspecies name *montana*.

The authors discovered a last instar larva of *F. a. montana* on a leaf of an orchid (Fig. 5; April 12, 2008). This plant seems to belong to the genus *Coelogyne* (Orchidaceae, Fig. 7). The larva was reared further with the leaves of this orchid until pupation (April 17, 2008). A male butterfly emerged after four weeks (May 12, 2008). It is rather surprising that *F. a. montana* feeds on *Coelogyne* sp., as Igarashi & Fukuda (2000) reported that *F. a. aerope* in western China fed on *Smilax* sp. (Liliaceae). The larvae of these two subspecies are similar except for the color of the dorsal part of the body, which is yellow in *F. a. montana*, while orange in *F. a. aerope*. *F. a. excelsa* from Central Laos (Nakhai) was found flying rapidly around bamboo forests where no orchids seem to grow. The food plant of this subspecies is yet to be discovered.

### Discussion

It is evident that the new taxon discovered in the Phou Samsoum range belongs to the species *Faunis aerope*, in view of the resemblance of the general wing pattern and the similarity of the male genitalia to those of the nominotypical subspecies from China. On the other hand, the larger size, the broader and more distinct subapical/marginal band on the upperside of both wings and the much larger submarginal spots on the underside of both wings distinguish it from the nominotypical subspecies.

In comparison with the subspecies *excelsa* collected from Central Laos, *montana* is noticeably different in size, male genitalia and wing pattern (see Description). Moreover, *excelsa* was found in quite different environments (bamboo forests) at lower localities, and showed



Fig. 5. A final instar larva of *Faunis aerope montana* on an orchid leaf. Fig. 6. Habitat. Fig. 7: Food plant, *Coelogyne* sp.

remarkable agility in flight. On these observations, the authors support the contention by Monastyrskii (2004) that *excelsa* may be treated as a good species, along with *aerope*. In this context, two species of *Faunis*, namely *F. aerope montana* and *F. excelsa excelsa* are distributed in Laos.

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## 摘 要

ラオスの蝶覚え書き (V): 中部ラオス山地で発見されたアエローペヒメワモンの1新亜種の記載 (鱗翅目, タテハチョウ科, モルフォチョウ亜科, ワモンチョウ族) (中村紀雄, 若原弘之, 宮本龍夫)

*Faunis* (ヒメワモン) 属は東洋区に分布するワモンチョウの1群で9種よりなる。その7種は東洋区南部の島嶼部から知られ, その中で *F. canens* だけは大陸部にも分布を拡げている。大陸部には他に2種が知られ, その1種 *F. aerope* は本属の最大種である。Monastyrskii (2004) によると種 *F. aerope* は西南中国およびベトナム北部に分布する名義タイプ亜種群とラオスおよびベトナムから知られる *excelsa/centrala* 亜種群に分けられる。前者では小型・前後翅裏面亜外縁の斑紋列が小さく・♂交尾器の valva が短いのに対し, 後者では大型・上記斑紋列が大きく・valva が長い。著者らは2007年以来ラオス第3の高峰 Phou Samsoum (標高 2620 m) の山域で蝶類の分布調査を行っているが, その過程で大型・前後翅裏面亜外縁の斑紋列が大きい・♂交尾器の valva が短い特徴を持つ *F. aerope* の個体群を発見した。上記の他にも♂♀前翅表面先端-外縁部の黒褐色帯が幅広いなどの名義タイプ亜種との差異が認められるので, 新亜種 *F. aerope montana* として記載した。ランの1種 (*Coelogyne* sp.) の葉上で終齢幼虫が発見され, この植物で飼育を続けたところ蛹化し4週間後に♂が羽化した。この幼虫は五十嵐・福田 (2000) が図示したサルトリイバラ (*Smilax* sp.) を食する *F. aerope aerope* の幼虫と背中色彩が異なる以外は良く似ていた。本亜種は標高 1900–2100 m の常緑樹林帯に生息しており, 地上 1–1.5 m の空中を緩やかに飛ぶ。他亜種に比べて高標高の山地に住むことからこの新亜種名を選んだ。ラオスより知られている亜種 *excelsa* は小型で♂♀前翅表面先端-外縁部の黒褐色帯は *montana* と比べると不顕著で狭く, その♂交尾器の valva は遥かに長い。さらに, *excelsa* は中部ラオスの低山地 (550–620 m) の竹林に生息し迅速に飛翔する。これらの差異を考慮すると, *aerope* と *excelsa* は別種であるかも知れないとする Monastyrskii (2004) の意見は妥当であると判断される。

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